

REMARKS

Claims 1-7 are pending in the above-referenced application and stand rejected pursuant to 35 U.S.C §112, first paragraph. Claims 2-4 are further rejected pursuant to 35 U.S.C. §112, second paragraph. Applicants submit that these rejections are either overcome or demonstrated to be inappropriate in view of at least the amendment set forth above and the remarks that follow.

The 35 U.S.C. §112, Second Paragraph Rejection

Claims 2-4 are rejected pursuant to 35 U.S.C. §112, second paragraph because of informalities in claim 2, from which claims 3 and 4 each depend. The specific informality in claim 2 is the presence of "the the" within the claim. As noted above, claim 2 has been amended to replace "the the" with "the," thus overcoming this rejection of claims 2-4.

The 35 U.S.C. §112, First Paragraph Rejections

Claims 1-7 are rejected pursuant to 35 U.S.C. §112, first paragraph as failing to comply with the written description requirement because they purportedly contain subject matter that "was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, has possession of the claimed invention.

Specifically, the Examiner contends that the following limitations of claims 1, 2 and 7 are new matter that "could not be located in the specification as originally filed."

- "at least one corner of the backing plate and to at least a portion of the periphery of the backing plate such that a different level of cooling is achieved at the at least one corner than at the at least a portion of the periphery" (see claim 1)
- "the level of cooling is higher at the at least one corner than at the at least a portion of the periphery" (see claim 2)
- "at least one corner of a backing plate such that a different level of cooling is achieved at the at least one corner than at the at least a portion of the periphery" (see claim 7)

Applicants submit that these portions of claim 1, claim 2 and claim 7 are supported by specification of this application, as filed, including, *inter alia*, by the following language:

"Further, according to the embodiment, the cooling medium flow passage 2 having four channels is formed and cooling medium flows through each channel of the cooling medium flow passage 2, so that it is possible to cool the portion in the vicinity of four sides of the target 10, namely, the peripheral portion of the target 10. Consequently, the peripheral portion of the target 10 having higher sputtering power density than that of the central portion of the target 10, namely having higher temperature than that of the central portion, can be cooled effectively, thereby a uniform temperature distribution of the target 10 is ensured" (see page 28, lines 3-13).

"In the invention, it is preferable that an inlet of the cooling medium flow passage is provided at a position in the backing plate which position corresponds to at least one of the four corner portions of the target. According to the invention, since the inlet of the cooling medium flow passage is provided at the position in the backing plate which position corresponds to at least one of the four corner portions of the target, the four corner portions can be cooled reliably by flowing the cooling medium having the lowest temperature to the location corresponding to the four corner portions where the temperature becomes the highest in the target" (see page 16, lines 9-19).

"By controlling a magnetic circuit design of the magnetic field generating means and a geometric arrangement between the backing plate 1 and the magnetic field generating means, in addition, by controlling the intensity and the distribution of magnetic field which is generated on the target surface, it is possible to apply the different sputtering powers to the target 10 so as to obtain a uniform plasma density and form a thin film having a uniform film thickness on a substrate. More specifically, in the case where the size of the target 10 is not extremely large in comparison with the substrate, for example, in the case of using the rectangular target 10 having about 1.1 times to 1.5 times larger side than the rectangular substrate, higher electric power than that of a central portion of the target 10, is applied to a periphery portion of the target 10 and higher electric power than that of the peripheral portion is applied to four corner portions of the target 10" (see page 25, lines 1-17).

"Further, since cooling medium introduced into the backing plate 1 circulates while absorbing a heat from the backing plate 1, the temperature of the cooling medium becomes the lowest at the cooling medium inlet 6 and becomes the highest at the cooling medium outlet 7. According to the embodiment, the cooling medium inlet 6 of the cooling medium flow passage 2 having four channels are respectively placed in the vicinity of locations corresponding to the four corner portions of the target 10. Consequently, the four corner portions of the target 10 having the highest sputtering power density, namely having the highest temperature, can be cooled effectively, thereby the uniform temperature distribution of the target 10 is ensured" (see page 26, line 22 to page 27, line 8).

"Figs. 4A and 4B are schematic views showing a state where a sputtering power is applied to the target surface using the backing plate 1 of the invention. In Fig. 4A, oblique lines indicate a current distribution, and in Fig. 4B, oblique lines indicate a temperature distribution. As shown in Fig. 4A, in order to obtain the uniform film thickness of the thin film to be formed on the substrate, the different sputtering powers are applied to a region which comes in contact with the target 10. More specifically, higher sputtering power than that of a target central portion 24 is applied to periphery portions 22 and 23. Moreover, higher sputtering power than that of the periphery portions 22 and 23 is applied to a corner portion 21. The cooling abilities of the backing plate 1 differs as different electric powers required for sputtering are applied in the target surface. Namely, the backing plate 1 can cool the peripheral portions 22 and 23 better

than the central portion of the target 24, and cool the corner portion 21 better than the peripheral portions 22 and 23" (see page 28, line 14 to page 29, line 6).

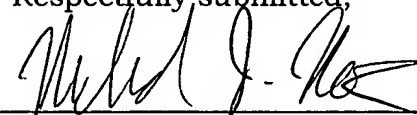
In view of the amendment and/or remarks set forth above, claims 1, 2 and 7 comply with 35 U.S.C. §112. Therefore, claims 1-7 are believed to be in condition for allowance, and reconsideration and allowance thereof are respectfully requested.

If the undersigned can be of any assistance in advancing the prosecution of this case, the Examiner is invited to contact him through the information given below.

Respectfully submitted,

Date: March 26, 2004

By: _____



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